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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,440	10/16/2001	Michael Greenstein	10004416	5699

7590 03/27/2007

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EXAMINER	
LAM, ANN Y	
ART UNIT	PAPER NUMBER
1641	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/981,440	GREENSTEIN ET AL.	
	Examiner	Art Unit	
	Ann Y. Lam	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18,23 and 24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18, 23 and 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 19 and 20 have been canceled.

Claims 21-22 have been withdrawn.

Claims 1-18, 23 and 24 are currently pending.

Claim Objections

Claim 1 is objected to because of the following informalities: "to" should be deleted in line 20 to avoid redundancy. Also, "achieves" in line 21 should be replaced with –to achieve--. Also, in line 22, there should be –and—after the semicolon, and in line 24, "modulates" should be –and to modulate--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-18, 23 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites in line 18, a controller, and in line 19 a power supply, and in line 20 a modulator, and in line 23 a feedback loop.

However, in the specification in paragraph 014, it is disclosed that "[a] **power supply** can be coupled to the infrared light sources to provide a sufficient drive current to regulate the temperature-controlled zones and **to modulate using a controller** so that the miniature analytical device can rapidly increase and maintain the temperature of the reactants in the temperature-controlled zones" (emphasis added.) Thus, it is disclosed here that the power supply modulates using a controller.

In paragraph 024, it is disclosed that "[t]he infrared **light source can be** supplied drive current by a power supply and **modulated by a controller** such that the current from the power supply achieves the desired thermal regulation in the temperature-controlled zones" (emphasis added.) Thus, it appears here that the light source can be modulated by a controller.

In paragraph 027, it is disclosed that "**[a] feedback loop**, comprising of providing the measured temperature to the controller, **modulates the power supply** to drive the infrared light source so that the desired temperature is achieved with a smooth control curve and/or is maintained at the desired temperature" (emphasis added.) It appears that Applicants intended to mean that the feedback loop provides the measured temperature to the controller and modulates the power supply. (It is noted that correction of the grammar should be made.)

In summary, the specification discloses that the power supply modulates using a controller; the light source can be modulated by a controller, and the feedback loop modulates the power supply. Thus, while there is no "modulator" *per se* disclosed in the specification, the power supply and/or controller and/or feedback loop can be referred to

as a "modulator". However, Applicants newly amended claims recite "a controller", "a power supply", "a modulator", and "a feedback loop", and thus it appears that the recited modulator is a separate element from the other elements recited. However, there is no disclosure of a modulator that is separate from the controller or feedback loop or power supply. Thus it is not clear as to whether the recited "modulator" is a separate element from the controller and feedback loop (in which case it is also not clear what this modulator comprises since it is not *per se* disclosed in the specification), or whether the modulator is the power supply and/or controller and/or feedback loop. For examination purposes, the recited "modulator" will be interpreted to be part of the power supply.

Claim 10 recites that the array of heat sources comprises internal heat generators. It does not appear that an infrared radiation emitting heat source is considered to be an internal heat source because it would not be on the cartridge. Claim 11 recites that the internal heat generators comprise resistive heaters, inductive heaters or Peltier heaters. However, the newly amended claim 1, from which claim 11 ultimately depends, recites that the heat sources are infrared radiation emitting heat sources, and thus claim 11 conflicts with claim 1. For examination purposes, claim 11 will be interpreted as if the heat sources are resistive heaters, inductive heaters or Peltier heaters. Claim 10 will be interpreted such that a resistive heater within a cartridge is considered to be an internal heat generator.

Claim 15, lines 2-4, recites that the device further comprises a controller coupled to the power supply for controlling the drive current to the array of heat sources. Claim 15 however ultimately depends from claim 1, which is newly amended to include a

controller. Thus it is not clear whether or not the controller recited in claim 1 is the same as the controller in claim 15. For examination purposes, claim 15 will be interpreted to be referring to the same controller.

Claim 23, recites that the device further comprises a feedback loop including use of the reactant temperature to modulate a power supply that drives the array of heat sources. However, claim 1, from which claim 23 depends, already recites a feedback loop to drive heat sources to achieve a desired temperature. Thus it is not clear whether or not the feedback loop recited in claim 23 is the same feedback loop as in claim 1. For examination purposes, they will be considered to be the same feedback loop.

Claims 2-18, 23 and 24 are rejected under 112, second, at least because they depend from claim 1 which is vague for the reasons set forth above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

I. Claims 1, 2, 10-18, 23 and 24, are rejected under 35 U.S.C. 103(a) as being unpatentable over Zou et al., 6,762,049, in view of Austin et al., 6,203,683, and further in view of Laugharn, Jr. et al., 6,719,449.

Zou et al. disclose the invention substantially as claimed. More specifically, as to claims 1 and 2, Zou et al. disclose a point-of-care miniature analytical device with thermal regulation (see col. 2, lines 29-32, disclosing a miniaturized reaction chip with thermal control; see also column 4, line 65 – col. 5, line 1, disclosing typical dimensions of the device) comprising:

a cartridge (element 5, see fig. 4) comprising one or more portions constructed of a material, wherein the one or more portions define an array of temperature-controlled zones (chambers 6, see col. 2, line 67) including reactants (col. 4, line 13), and wherein each said temperature-controlled zone is constrained by cartridge portions that surround an area of space in which a reactant is contained and confine the reactant from flowing into other of said temperature-controlled zones (fig. 4, disclosing each chamber 6 to be isolated from other chambers),

and wherein the cartridge portions include clear or translucent portions (i.e., element 5, disclosed as being made of glass in column 3, lines 11-12) that allow direct irradiation of reactant molecules to facilitate thermal regulation of the reactants;

an array of heat source (13, see fig. 4) wherein the array of heat sources is positioned to correspond to the array of temperature-controlled zones so that each heat source is arranged to provide temperature regulation to a corresponding temperature-controlled zone, and wherein the heat sources emit localized radiation to provide heating in the corresponding temperature zone (col. 2, lines 63-67, disclosing an array of blocks for each chamber 6, and col. 3, lines 63-66, disclosing heater and sensor 13 on the top of each block 1);

whereby each temperature-controlled zone is controllable to a designated temperature (col. 1, lines 53-54, and col. 2, lines 42-43, disclosing independently and individually controlled heaters and sensors),

The Office notes that the limitation regarding the cartridge portions being clear or translucent portions (which is disclosed by Zou et al. as element 5, being made of glass in column 3, lines 11-12) are capable of allowing direct irradiation of reactant molecules to facilitate thermal regulation of the reactants, and thus the prior art reference Zou et al. meets this claimed limitation. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In this case, the element (5) disclosed by Zou et al. as being made of glass is capable of performing the intended use because a glass material is capable of allowing direct irradiation of reactant molecules to facilitate thermal regulation of the reactants.

Zou et al. teach that the heat source is a resistive material (see column 3, lines 54-56), but do not disclose that the heat source may be an infrared light source.

Austin et al. however teach that a resistive heater and an infrared light source are functional equivalents as heaters. Austin et al. teach that a wire (i.e., resistive heater) can be used to heat an array of chambers for holding reactants and that heating could also be achieved by infrared light sources shining on the chip (col. 8, lines 10-15). Thus, Austin et al. teach that resistive heaters and infrared light sources are functional equivalents in performing the function of heating an array of chambers for holding

reactants. Moreover, both Zou et al. and Austin et al. teach that the chambers are for reactions involving DNA reagents (see Zou et al., col. 5, lines 46-48, and Austin et al., col. 2, lines 45-46). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide infrared light sources to heat the chambers in the Zou et al. invention because Austin et al. teach that an infrared light source is a functional equivalent to a resistive heater, such as the resistive heater in the Zou et al. invention, for heating reaction chambers for reactions such as those involve DNA reagents.

Also, Zou et al. do not teach that the temperature monitor is an optical temperature monitor, not in contact with the cartridge and disposed adjacent to a portion of the cartridge surrounding the temperature controlled zones, that monitors reactant temperature by measuring electromagnetic radiation. (Rather, Zou et al. teach that the temperature monitor is a resistive material (col. 3, line 54-56).

However, Laugharn et al. teach a device for exposing a biological sample to heat (col. 1, lines 45-58) and that heating of individual wells can be determined by an infrared thermal measuring device directed at the top of a vessel collimated so as to view only the well of interest and that this provides non-contact means of analysis that is not readily available in the conventional devices (col. 18, line 63 – col. 19, line 5). This infrared thermal measuring device is considered to be an optical temperature monitor not in contact with a cartridge and disposed adjacent to the cartridge surrounding the zones in the cartridge. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an infrared temperature-sensing device as

taught by Laugharn et al. in place of the temperature sensing device in the Zou et al. device because Laugharn et al. teach that an infrared temperature-sensing device provides the advantage of allowing non-contact analysis. One of ordinary skill in the art would have reasonable expectation of success in utilizing an infrared temperature-sensing device as taught by Laugharn et al. as the temperature sensor in the device taught by Zou et al. because Laugharn et al. teach that each individual well, or reaction chamber, such as the Zou et al. reaction chambers, can be monitored. Also, both references teach miniaturization of the devices (see Zou et al., col. 2, lines 29-32; and see Laugharn et al., col. 37, line 66 – col. 38, line 7), which support that one of ordinary skill in the art would have reasonable expectation of success in modifying the Zou et al. device in view of the teachings of Laugharn et al., in which it is taught that the structural elements are also miniaturized.

Applicants also recite "a controller; a power supply configured to supply drive current to the infrared light source to provide that current from the power supply [to achieve] the desired thermal regulation in the temperature-controlled zones; a feedback loop configured to provide measured temperatures to the controller, [and to modulate] the power supply to drive the infrared light heat sources to achieve a desired temperature with a smooth control curve at the desired temperature.

Zou et al. disclose in column 2, lines 42-46, that "[i]ndividually controlled heaters and sensors located between the blocks and the substrate allow each chamber to follow its own individual thermal protocol while being well thermally isolated from all other chambers and the substrate." Thus it follows that there is a power supply for the heater

and a controller to control the heaters. It also follows that there is also a modulator because the heaters can be controlled; as discussed above, the recited "modulator" is interpreted to be part of the power supply.

However, Zou et al. do not teach a feedback loop.

Laugharn, Jr. et al. teach a feedback control mechanism in connection with control of temperature can enhance the invention, and that a variety of sensors or sensed properties may be appropriate for providing input for feedback control and that these properties include sensing of temperature of the sample (col. 3, lines 55-65.) Laugharn, Jr. et al. teach that, for example, the infrared sensor may input temperature readings to a computer which, in accordance with a controlling program, can produce an output (col. 19, lines 9-17.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a feedback control mechanism as taught by Laugharn, Jr. et al. in the Zou et al. invention because Laugharn, Jr. et al. teach that it enhances a device by providing the benefit of maintaining the temperature within desired limits. The skilled artisan would also have reasonable expectation of success in providing an optical temperature monitor and feedback mechanism taught by Laugharn, Jr. et al. with an infrared heat source because Laugharn et al. teach that a computer can be used to receive input from the optical temperature monitor and to produce an output. While Laugharn et al. utilizes sonic energy to heat materials, the skilled artisan would recognize that the computer can be modified to produce output to control a different type of heater, such as an infrared heater.

As to the language at the end of claim 1, "to achieve a desired temperature with a smooth control curve at the desired temperature", a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In this case, the feedback loop is capable of modulating the power supply to drive the heat sources to achieve a desired temperature with a smooth control curve because Laugharn, Jr. et al. disclose that the feedback loop is capable of maintaining a certain temperature.

As to claim 2, the infrared heat sources (taught by Austin et al.) are electromagnetic radiation emitters.

As to claim 10, Zou et al. disclose an array of heat sources (13) which are considered to be comprised of internal heat generators because the heat sources are internal to the device as shown in figure 4 and are adjoined to the reactants and generate internal heat within the reactants.

As to claim 11, Zou et al. disclose internal heat generators comprising resistive heaters (col. 5, lines 14-15), inductive heaters or Peltier heaters.

As to claim 12, an array of electrical leads (16, col. 3 line 66 – col. 4, line 1, in Zou et al.) correspond with the internal heat generators.

As to claim 13, the infrared radiation emitting heat sources are considered to be external heaters because it directs light from the source to a separate element, i.e., the temperature-controlled zones.

As to claim 14, a power supply drives current to increase the temperature of the zones (see Zou et al., col. 2, lines 42-43). With the modification of the Zou et al. device in view of Laugharn, Jr. et al. the power supply would increase the temperature using the infrared heater.

As to claim 15, a controller has been discussed above in claim 1.

As to claim 16, with the modification of the Zou et al. device in view of the teachings Laugharn, Jr. et al. of a feedback loop, the controller would be capable of modulating the power supply based on a temperature measured from the temperature-controlled zones.

As to claim 17, an array of temperature monitors is positioned to correspond to the array of temperature controlled zones (col. 3, line 64, and fig. 4 of Zou et al.)

As to claim 18, said reactants comprise assay elements for body fluid analysis (see Zou et al., col. 1, lines 12-13, and lines 52-59.)

As to claim 23, the feedback loop has been discussed above regarding claim 1.

As to claim 24, the heat source (infrared heat source) is capable of providing a temperature that is maintained at a desired temperature (see above regarding claim 1.)

II. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zou et al., 6,762,049, in view of Austin et al., 6,203,683, and Laugharn, Jr. et al., 6,719,449, as applied to claim 2, and further in view of Miyazaki et al., 5,599,502.

Zou et al. in view of Austin et al. and Laugharn et al. disclose the invention substantially as claimed (see above), except for the infrared heat source being an infrared *laser.*

Miyazaki et al. however teach a device with chambers holding a liquid (col. 3, lines 3-18). Miyazaki et al. teach that the device can be used for reacting reagents (col. 7, lines 21-26). It is also taught by Miyazaki et al. that the liquid can be heated by the application of light form a light source such as infrared light source, e.g., infrared laser (col. 6, lines 23-28, and col. 9, lines 4-34.) It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a laser as the specific type of infrared light source that is generally taught by Austin et al. because Miyazaki et al. teach that a laser is a specific type of infrared light source that can be used for heating a liquid during a reaction. That is, while Austin et al. only teach an infrared light source in general but do not disclose a specific type of infrared light source, one of ordinary skill in the art would be motivated to use a laser because Miyazaki et al. teach that a laser is a specific type of infrared light source and that this type of infrared light source is also compatible for use with heating liquid during a reaction. Because Miyazaki et al. teach that an infrared laser can be used to heat liquid during a reaction, one of ordinary skill in the art would have reasonable expectation of success in utilizing an infrared laser to heat the reaction in the device of Zou et al., in view of Austin et al. and Laugharn, Jr. et al.

As to claim 7, the infrared light laser is capable of generating infrared light of a different wavelength. (The Office notes that the claim does not recite from what the

wavelength is different, and thus the claim will be interpreted broadly to mean that the wavelength is different from *any* other wavelength.)

Also, as to claims 8 and 9, none of the prior art references cited disclose that the light sources generate infrared light with a wavelength of at least .775 micrometers, or at most 7000 micrometers. However, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. In this case, the prior art references (Zou et al., Austin et al., Laugharn, Jr. et al. and Miyazaki et al.) disclose the general conditions of the claims, and infrared light with a wavelength as claimed is within a workable or optimum range and thus its discovery only involves routine skill in the art. For example, Zou et al. teach that the device is used for polymerase chain reactions (col. 1, lines 52-59 and col. 5, lines 45-47), as does Austin et al. (col. 9, lines 8-10). Utilizing an infrared wavelength as claimed by Applicant is within a workable or optimum range for heating reactants for purposes such as polymerase chain reactions.

III. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zou et al., 6,762,049, in view of Austin et al., 6,203,683, and Laugharn, Jr. et al., 6,719,449, as applied to claim 2, and further in view of Miyazaki et al., 5,599,502, and Scott, 5,594,751.

Zou et al. in view of Austin et al. and Laugharn, Jr. et al. disclose the invention substantially as claimed (see above with respect to claims 1 and 2), except for the light source being a vertical cavity surface emitting laser, or a vertical cavity surface emitting

laser that emits infrared light. However, the motivation to utilize a vertical cavity surface emitting laser is taught and suggested by Austin et al. in view of Miyazaki et al. and Scott, as described more fully below.

Wile Austin et al. teach an infrared light source, Austin et al. do not specifically disclose that the infrared light source is a *laser.*

Miyazaki et al. however teach a device with chambers holding a liquid (col. 3, lines 3-18). Miyazaki et al. teach that the device can be used for reacting reagents (col. 7, lines 21-26). It is also taught by Miyazaki et al. that the liquid can be heated by the application of light from a light source such as infrared light source, e.g., infrared laser (col. 6, lines 23-28, and col. 9, lines 4-34.) It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a laser as the specific type of infrared light source that is generally taught by Austin et al. because Miyazaki et al. teach that a laser is a specific type of infrared light source that can be used for heating a liquid during a reaction. That is, while Austin et al. only teach an infrared light source in general but do not disclose a specific type of infrared light source, one of ordinary skill in the art would be motivated to use a laser because Miyazaki et al. teach that a laser is a specific type of infrared light source and that this type of infrared light source is also compatible for use with heating liquid during a reaction. Because Miyazaki et al. teach that an infrared laser can be used to heat liquid during a reaction, one of ordinary skill in the art would have reasonable expectation of success in utilizing an infrared laser to heat the reaction in the Zou et al. device. Moreover, Scott teaches that a vertical cavity surface emitting laser (vcsel) can emit

infrared light, that is, a vcsel is a type of infrared laser (col. 8, lines 32-34). Scott teaches a vertical cavity surface emitting laser that is highly-efficient (col. 1, lines 6-9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a vertical cavity surface emitting laser as disclosed by Scott as the specific type of infrared laser generally disclosed by Miyazaki because Scott teaches that a vertical cavity surface emitting laser is capable of emitting infrared wavelengths and has the advantage of being highly efficient.

Response to Arguments

Applicants' arguments filed January 5, 2007 have been considered but are not persuasive.

Applicants' summary of the present invention as well as the cited references by Zou et al., Laugharn, Jr. et al., Austin et al., Miyazaki et al. and Scott et al. are acknowledged. Applicants argue that "[n]one of the cited references, singularly or in combination, disclose an optical temperature monitor that monitors reactant temperature by measuring electromagnetic radiation, a controller and power supply that supply drive current to an infrared light source, a modulator coupled to the controller to provide that current from the power supply achieves a desired thermal regulation in temperature-controlled zones, a feedback loop that provides measured temperatures to the controller, and modulates the power supply to drive the infrared light heat sources to achieve a desired temperature with a smooth control curve at the desired temperature." However, Applicants' do not further give any explanation or reasons for this assertion.

These limitations are discussed above in the grounds for rejection, and the motivations for combining are also discussed above. To repeat, it would have been obvious to one of ordinary skill in the art to provide a feedback control mechanism as taught by Laugharn, Jr. et al. in the Zou et al. invention because Laugharn, Jr. et al. teach that it enhances a device by providing the benefit of maintaining the temperature within desired limits. The skilled artisan would also have reasonable expectation of success in providing an optical temperature monitor and feedback mechanism taught by Laugharn, Jr. et al. with an infrared heat source because Laugharn et al. teach that a computer can be used to receive input from the optical temperature monitor and to produce an output. While Laugharn et al. utilizes sonic energy to heat materials, the skilled artisan would recognize that the computer can be modified to produce output to control a different type of heater, such as an infrared heater. As to the language at the end of claim 1, "to achieve a desired temperature with a smooth control curve at the desired temperature", a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In this case, the feedback loop is capable of modulating the power supply to drive the heat sources to achieve a desired temperature with a smooth control curve because Laugharn, Jr. et al. disclose that the feedback loop is capable of maintaining a certain temperature.

Applicants have not provided any persuasive arguments as to why the skilled artisan would not combine the teachings of the cited art.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann Y. Lam whose telephone number is 571-272-0822. The examiner can normally be reached on Mon.-Fri. 10-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

3/19/07

ANN YEN LAM
PATENT EXAMINER